


TREATMENT



**SURGERY &  
RADIATION THERAPY**  
 Louanne Currence, RHIT, CTR

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Definition



♦ Any procedure that:
 

- Modifies
- Controls
- Removes
- Destroys

 proliferating cancer tissue

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Treatment Terms



♦ Treatment plan – statement by managing physician  
 ♦ First course (FCOT) – planned & administered  
 ♦ Subsequent therapy – progression of disease or failure of FCOT

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Treatment Terms (cont)



♦ Cancer-directed therapy  
 ♦ Surg dx & staging procedure  
 ♦ Curative  
 ♦ Palliative  
 ♦ Adjuvant/Neoadjuvant  
 ♦ Multimodality

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### Treatment Terms (cont)

- ◆ Complete remission (CR)
- ◆ Partial remission (PR)
- ◆ Progression
- ◆ Stable disease

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### Surgery Uses

- ◆ Remove the cancer
- ◆ Stage – look for spread
- ◆ Bypass the cancer
- ◆ Reconstruction
- ◆ Relieve symptoms
- ◆ Prevent future tumors

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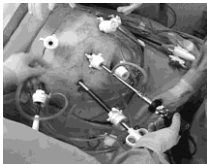
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### Surgery Types

- ◆ Open
- ◆ Laparoscopic
- ◆ Laser
- ◆ Electrosurgery
- ◆ Cryosurgery
- ◆ Chemosurgery



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### Surgery of Primary Site

- ◆ PRIMARY SITE ONLY
  - Where performed
- ◆ Appendix B
- ◆ If only 1 coded , “most invasive”
- ◆ Excisional biopsies
- ◆ Regional tissue only if en bloc

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Samples

◆50 =

-C18x Total colectomy

-C50x Modified radical mastectomy

-C619 Radical prostatectomy

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EX: Breast Surgery

00 None

19 Local tumor destruct, NOS, w/o path

20 Partial lump

21 w/nipple resect

22 exc biopsy

23 re-excision

24 segmental

30 Subq mastectomy

40 Total (simple)

41 w/o contralat

43 Reconstruct

44 Tissue

45 Implant

46 Combined

42 w/contralat brst

47, 48, 49, 75

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LUMPECTOMY

MODIFIED RADICAL MASTECTOMY

TOTAL MASTECTOMY

PARTIAL MASTECTOMY

RADICAL MASTECTOMY

visualsonline

.cancer.gov

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Thoracotomy

www.siumed.edu/surgery

VATS

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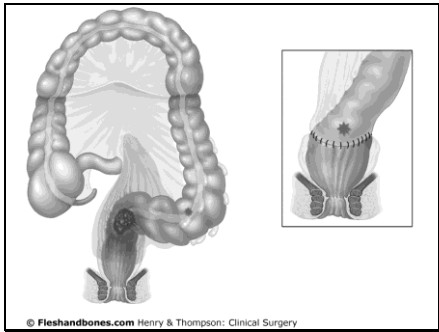
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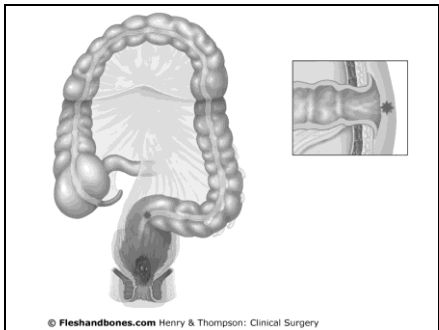
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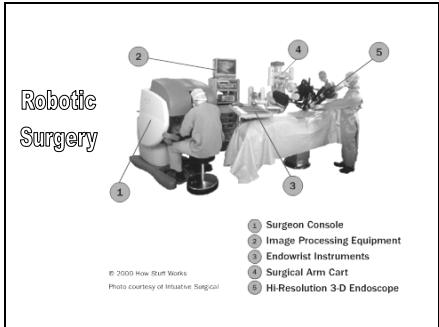
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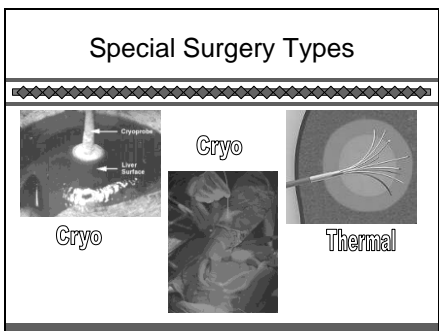
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Surgical Margins of Primary Site

- ◆Primary Site Only
- ◆Last or final margin
  - Macroscopic involvement
  - Microscopic involvement
  - Not evaluable

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Scope of Regional Lymph Node Surgery

- ◆Regional lymph nodes
  - Includes sentinel nodes
  - Includes biopsy or aspiration LN
  - Combinations
- ◆Where done

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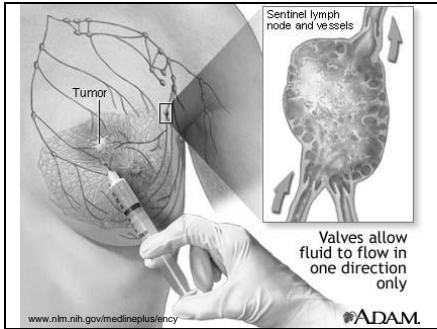
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Scope of Regional LN

0 - No Regnl LN surg	5 - 4 or more Reg LNs
1 - Bx or aspiration	6 - Sent LN + code
2 - Sentinel LN	3,4,or 5 (same time or timing ?)
3 - Reg LNs, number ?	7 - Sent LN + code
4 - 1-3 Reg LNs	3,4,or 5 at different time

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Surgery Other Site
<ul style="list-style-type: none"> <li>◆0 None</li> <li>◆1 NOS Regional or Distant</li> <li>◆2 Regional Site</li> <li>◆3 Distant LN</li> <li>◆4 Distant site</li> <li>◆5 Combination of 2, 3, or 4</li> <li>◆9 Unknown</li> </ul>

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Reason No Surgery Primary Site
<ul style="list-style-type: none"> <li>◆0 Surgery performed</li> <li>◆1 Surgery not part of FCOT</li> <li>◆2 Contraindicated (comorbid factors)</li> <li>◆5 Patient died prior to surgery</li> <li>◆6 Recommended but not done</li> <li>◆7 Patient/guardian refused</li> <li>◆8 Surgery recommended, unk if done</li> <li>◆9 Unk if recommended/done, autopsy</li> </ul>

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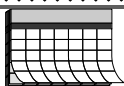
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Treatment Dates
<ul style="list-style-type: none"> <li>◆Date FCOT</li> <li>◆First Surgical Procedure               <ul style="list-style-type: none"> <li>–Primary Site, Reg LN, or Other</li> </ul> </li> <li>◆Most Definitive Surgical Resection</li> <li>◆Surgical Discharge</li> <li>◆Readmission w/in 30 days</li> </ul>




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Coding Reminder
<ul style="list-style-type: none"> <li>◆Core/excisional biopsy removes all cancer before 2<sup>nd</sup> surgery               <ul style="list-style-type: none"> <li>–If unknown until after 2<sup>nd</sup> surgery, code both as excisional biopsy or higher</li> <li>–If know biopsy removed all cancer, code 2<sup>nd</sup> surgery as re-excision</li> </ul> </li> </ul>

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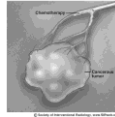
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## Embolization

- ◆ Definition
  - Blocking of an artery by a clot of foreign material.
  - Common sites: liver, kidney, vascular tumors
- ◆ Agents
  - collagen, silicone, coil, polyvinyl alcohol, plastic microspheres, gelatin sponge, cyanoacrylates, sclerosing chemotherapy




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## Coding Embolization

- ◆ Code 10 for surgery of primary site if no specific code
- ◆ Code chemo also if chemo agent caused embolization
- ◆ Code brachytherapy if embolization caused by radioactive agent or seeds
- ◆ Code as Other Tx if
  - Not done on primary site
  - Not done with chemo or RT agent (EX: microspheres or alcohol agents)
  - Unknown if done with chemo or RT
- ◆ Per FORDS 2009

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## Op Note vs Path Specimen

- ◆ What if op note and path reports don't match definition of surgery code? (Name of Operation)
  - Is surgery title MORE extensive?
    - Check Surgery Record Log – was specimen sent? TRUST the surgeon
  - Is surgery title LESS extensive? – code more extensive if path proves

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## Ignore Rules?

- ◆ Brain Tumors – per FORDS 2009, SEER Program Manual 2008 – *IGNORE NAACCR Webinar and I&R*
  - 20 Local excision/biopsy
  - 40 Partial resection
  - 55 Gross total resection
- ◆ Hematopoietic non-treatment choices in 2010? (aspirin, transfusion, etc.)

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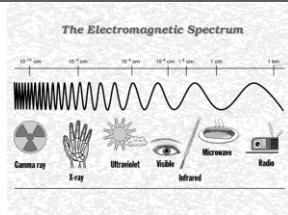
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## Radiation



History



## RT: How It Works

- ◆ Ionization
- ◆ Fractionation
- ◆ 4 R's
  - Repair                      Repopulation
  - Redistribution      Reoxygenation




Radiosensitivity

◆ Tumors

– High

– Medium

– Low



◆ Normal Tissue

– High

– Medium

– Low

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Beam Radiation

◆ Beam radiation

– Orthovoltage

– Megavoltage

• cobalt, linear accelerator, neutron beam, stereotactic radiosurgery (gamma knife), IORT

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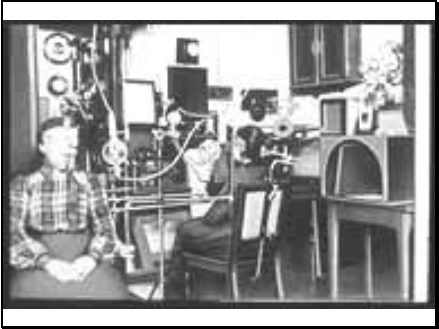
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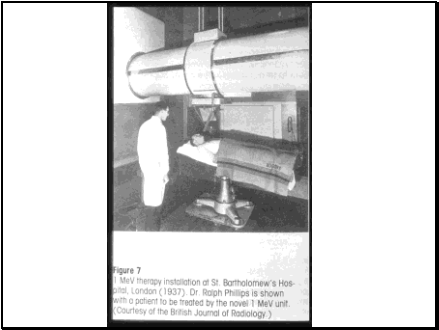
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## Linac Accelerator

Clinac 2500C

- 1.9 M. SW. Switched Accelerator
- Advanced Dual Plane, 270° Automatic Bending Magnet
- Dual X-Ray Energies, 6 and 24 kV
- Extended Range Electrons, 6-22 MeV
- 5.5 MW Klystron
- Advanced Control System
- Standard Independent Collimator, Special Procedures and RV Features
- Designed to Provide the Most Advanced Treatment Capabilities Now, and to the Year 2000




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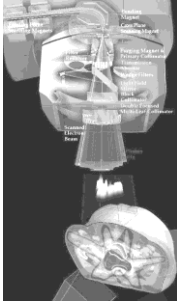
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Ionized beam sent past magnets, filters, mirrors, collimator plan

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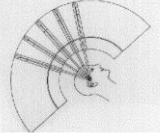
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## Gamma Knife

www.gammaknife.com/sub-edu/halt-to-expect.html

www.shef.ac.uk/~rel/gamma.htm

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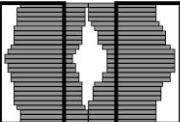
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## IMRT



www.pamf.org/adonco/imrt.html

www.isbe.ch/~wwwvse/studienbetrieb/diplomlibrary/559139\_01forfig.html

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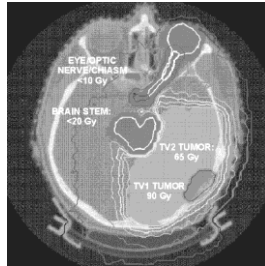
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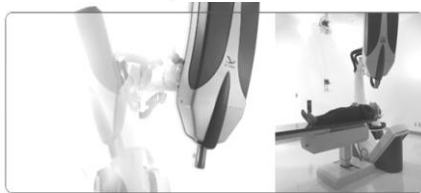
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## IMRT Plan



[www.spectral.com/imrt.shtml](http://www.spectral.com/imrt.shtml)

## Cyberknife

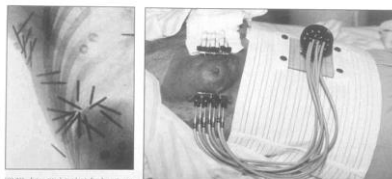


<http://www.cyberknifeintl.com/>

## Radioactive Implants

### ◆ Radioactive implants

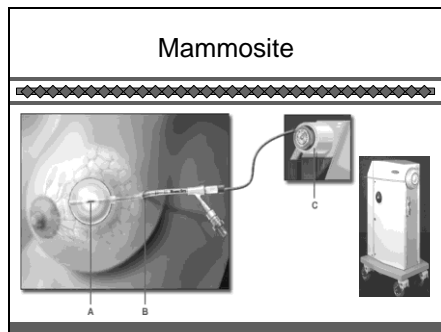
- interstitial implants
- seeds
- needles
- intracavitary applicators
- intraluminal



[20.31] Interstitial needles for brachytherapy. The radiograph shows the distribution of needles. The needles are attached to the distal end of the applicator for distribution purposes. In this Washington Hospital technique, 40-50 needles, containing a total of 20-30 mg of  $^{192}\text{Ir}$ , are inserted. The average total dose delivered was 16,000-20,000 milligrays.

[20.34] Remote afterloading interstitial brachytherapy in the 1990s. The technique "brachytherapy" is used for brachytherapy and ensures that it is not necessary for the patient to have a complicated brachytherapy, such as an implant in the first half of this century. The remote afterloading machine is the interstitial LDR, which uses remote  $^{192}\text{Ir}$  afterloading source. A template is used (left) to assist in positioning the needles accurately. The source transfer tubes connect and the afterloading (right) are also shown.

## Interstitial Implant




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### Radioisotopes

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◆ Systemic RT

- iodine-131, phosphorus-32, strontium 89 & 90
- administered orally, intracavitary, or by intravenous injection

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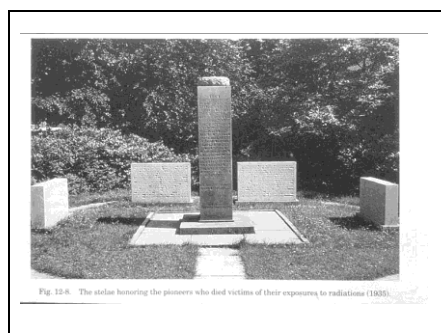
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Radiation: Intent of Treatment
<ul style="list-style-type: none"> <li>◆ Curative treatment               <ul style="list-style-type: none"> <li>– Primary site</li> <li>– Adjuvant mode</li> </ul> </li> <li>◆ Palliative treatment</li> <li>◆ Prophylactic radiation</li> </ul>

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Location of RT
<ul style="list-style-type: none"> <li>◆ 0 None</li> <li>◆ 1 All at this facility</li> <li>◆ 2 Regional tx here, boost elsewhere</li> <li>◆ 3 Boost here, regional elsewhere</li> <li>◆ 4 All RT elsewhere</li> <li>◆ 8 Other (not 1-4)</li> <li>◆ 9 Unk</li> </ul>

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RT Volume
<ul style="list-style-type: none"> <li>◆ Volume means anatomic target, not how much was given</li> <li>◆ 00 None</li> <li>◆ 01-60 Anatomy sites               <ul style="list-style-type: none"> <li>– Some sites have 2 listings (NOS vs limited)</li> </ul> </li> <li>◆ 98 Other (not 01-60)</li> <li>◆ 99 Unknown what part</li> </ul>

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Regional RT Modality
<ul style="list-style-type: none"> <li>◆ "Dominant modality"</li> <li>◆ Photons and x-rays equivalent</li> <li>◆ Variety of RT sources               <ul style="list-style-type: none"> <li>– Beam - (codes 20 - 43)</li> <li>– Brachytherapy - (codes 50 - 55)</li> <li>– Radioisotopes - (codes 60 - 62)</li> <li>– Combination - (codes 80, 85)</li> </ul> </li> </ul>

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Regional Dose cGy
<ul style="list-style-type: none"> <li>◆ 1 Centigray (cGy) = 1 Rad               <ul style="list-style-type: none"> <li>– 100 cGy = 1 Gray = 1 J/kg = 100 Rad</li> </ul> </li> <li>◆ Do not include Boost</li> <li>◆ 88888 N/A (brachytherapy or radioisotopes)</li> <li>◆ 99999 RT given, dose unknown OR unknown if given</li> </ul>

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Boost RT
<ul style="list-style-type: none"> <li>◆ Boost Treatment Modality (same codes as RT Modality)               <ul style="list-style-type: none"> <li>– If unknown how boost given, assume same as RT Volume</li> </ul> </li> <li>◆ Boost Dose: cGy (same codes as RT cGy)</li> </ul>

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# Treatments to Volume
<ul style="list-style-type: none"> <li>◆ # Fractions               <ul style="list-style-type: none"> <li>– 00 None</li> <li>– 01 - 98 Total number treatment sessions</li> <li>– 99 RT done, number unknown OR unknown if RT done</li> </ul> </li> </ul>

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RT/Surgery Sequence
<ul style="list-style-type: none"> <li>◆ Surg includes Primary Site, Scope Reg LN, OR Surg Other Site               <ul style="list-style-type: none"> <li>– 2 RT before Surg</li> <li>– 3 RT after Surg</li> <li>– 4 RT before &amp; after Surg</li> <li>– 5 Intraoperative RT</li> <li>– 6 Intraoperative RT + other RT</li> <li>– 9 Unk sequence OR Unk if RT done</li> </ul> </li> </ul>

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## Reason No Radiation

### ◆ Why no RT to Primary Site

- 0 RT done
- 1 RT not part FCOT
- 2 RT contraindicated
- 5 RT not done due pt death first
- 6 RT not done, no reason given
- 7 RT refused by patient/family
- 8 RT recommended, unknown if done
- 9 Unk if RT recommended or done

